

Date: Tuesday, 11/6/2007 1:38:20 PM
 User: Kim Johnston

Process Sheet

Customer:	: CU-DAR001 Dart Helicopters Services	Drawing Name:	: ROUND BILLET 17-4
Job Number:	: 35582A		
Estimate Number:	: 10041	Part Number:	: D6104007
P.O. Number:	: N/A	Drawing Number:	: D6104 REV B
This Issue:	: 11/6/2007	S.O. No.:	: NA
Prsht Rev.:	: NC	Project Number:	: N/A
First Issue:	: NA	Drawing Revision:	: B
Previous Run:	: 35478A	Material:	: NA
Written By:	: <u>JA 07.11.07</u>	Due Date:	: 12/13/2007
Checked & Approved By:	: <u>JA 07.11.07</u>	Qty:	: 20
Comment:	: Est. A: 01.05.08 New Issue EC	Um:	: Each

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description:
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1.0	PG	PURCHASING
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Comment: PURCHASING

Issue P/O:

4996

C 207111107

a) Description: S.S round billet

b) Ø4.50" x 5.10" long

c) Tolerance on all dimensions are +0.030"/-0.000"

d) Material: 17-4PH Stainless steel (Ams 5643 or Aisi 630)

e) One blank makes 2 parts

f) Material certification required

(20)

2.0	D6104007P	17-4 SS Roundbar 4.50"OD
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Comment: Qty.: 1.0000 Each(s)/Unit Total: 20.0000 Each(s)
 17-4 SS Roundbar 4.50"OD

3.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure material certification is attached

C 21111107 (20)

4.0	QC6	DIMENSIONAL CHECK
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Comment: DIMENSIONAL CHECK

Ensure Material certification comply to Dwg D6104

C 2112106 (20)

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: D Date: 07/12/11
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 11/6/2007 1:38:20 PM
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Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: ROUND BILLET 17-4

Job Number: 35582A

Part Number: D6104007

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: CAC cell

5/4/12/06

6.0

QC21

FINAL INSPECTION/W/O RELEASE



(20)

Comment: FINAL INSPECTION/W/O RELEASE

2/2/12/11

Job Completion



run 2007/12/14

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W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

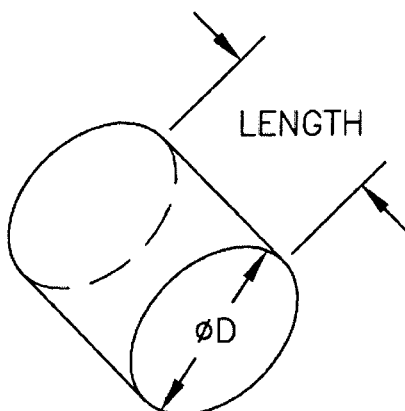


DESIGN RF	DRAWN BY [Signature]	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29 [Signature]

SPECIFICATION CONTROL DRAWING



MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRC)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 35582A

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A.M. CASTLE & Co. (Canada) Inc.

DATE CHARGED-LOADED NO. COM. ORD. NO.
EXPEDIE 27 NOV. 2007

POIDS TOTAL JOURNEE-TOT. DIV. W.

R13

ACQUISITION CLIENT-CUSTOMER REQUISITION NO.		NO. COM. CLIENT-CUST. ORD. NO.		COMPTES ACCT.	VENDEURS	TERR.	EXPEDIE PAR-SHIP VIA	BILL		NO. FEVILL/EMBALLAGE-B/L NUMBER	
559304 732150 29		4998		91037	200	40	USUAL MANITOULIN				
EUR-PURCHASING AGENT		TELEPHONE		HC	TAXE	NO. COM. ORD.	REGION LIVRAISON-DEL ZONE	F.A.B. F.O.B.			
MBA LACELLE		613 632-3336		9	0	1	C/C	PREPAID			
A-SHIP TO:		VENDEUR A-SOLD TO:		INFORMATION CREDIT-CREDIT INFORMATION				ROUTE			
-007		DART AEROSPACE LTD 1278 ABERDEEN HAWKESBURY ON K6A 1K7		R2C SEE FRANCE STATUS				29-NL-11/16 10-NH-11/16 30-NL-11/20 31-NL-11/20			
INSTRUCTIONS LIVRAISON-DELIVERY		INSTRUCTIONS LIVRAISON (CONT.)-DELIVERY (CONT'D.)		INSTRUCTIONS LIVRAISON (CONT.)-DELIVERY (CONT'D.)							
0-143381											

OPTION - ITEM 1

50703 RD 170R-4N1 RT BUL. TREATED COND 4 STNLS 5.10"
GOLD

CERTIFICAT DE CONFORMITE

See Packing Slip for English Certificate of Conformance

I, Castle & Co. (Canada) Inc. certifie que la material fourni
pres ce document rencontrera et est conforme aux
specifications du produit(s) décrit(s) ci-contre.

A.M. Castle & Co. (Canada) Inc.

INSTRUCTIONS

70L + 1/16" -0"

PRIOR DIST/ORD: 29 732150

COULÉE INFO-HEAT INFO QTE-QTY

514633 ✓

INSTRUCTIONS (CONT'D.)

20x5.10"

QTE/UNIT COM. ORDERED	POIDS COM. WT. ORDERED
28 PCS PCS	478
BALLOTS-BUNDLES	POIDS EXP. WT. SHIPPED
1 20	479
FORME-SHAPE I.A.C.	
14998	
ENT. WTS	
4	

OPTION - ITEM 2

TERMES ET CONDITIONS
DE VENTESDESABEU DES GARANTIES ET
RESTRICTION DE RESPONSABILITE
AU VERSO

INSTRUCTIONS

1 BOX

COULÉE INFO-HEAT INFO QTE-QTY

INSTRUCTIONS (CONT'D.)

QTE/UNIT COM. ORDERED	POIDS COM. WT. ORDERED
BALLOTS-BUNDLES	POIDS EXP. WT. SHIPPED
FORME-SHAPE I.A.C.	
ENT. WTS	

OPTION - ITEM 3

LES DIFFERENCES OU DOMMAGES DOIVENT ETRE INDIQUEES
LA COPIE REQUI, LIVRAISON ET LA FEVILL D'EMBALLAGE ET
PAR LE CHAUFFEUR ET LE CLIENT. LA COPIE DE LA REQU
INT INDIQUE DOIT ETRE SOUMIS DANS LES 10 JOURS
QU'UN CREDIT EST REQUIS.

INSTRUCTIONS

COULÉE INFO-HEAT INFO QTE-QTY

INSTRUCTIONS (CONT'D.)

QTE/UNIT COM. ORDERED	POIDS COM. WT. ORDERED
BALLOTS-BUNDLES	POIDS EXP. WT. SHIPPED
FORME-SHAPE I.A.C.	
ENT. WTS	

(LETTER MOULEE)-NAME (PRINT ONLY)

I PAR. RECEIVED BY

DATE REC
LAST RECEIVED

I-082 P0002/010 F-400

514-695-3281

FROM-metals castle

29-11-07 09:56

**OUTO
KUMPU****Certificate of Test*******
* CERTIFICATION *
*****

HEAT 514533 ORDER 0494057/002 SON 29186D BOL 0145113 TAG 1876578 09/05/07

SHIP TO:
ENERGY STEEL PRODUCTS
10002 WINDFERN RD.
(800-231-0016)
HOUSTON

TX 77064

----- YOUR ORDER & DATE -----
92538-OF 9/05/07 CUST# ENESTR01 CUST TAG#11904505----- ITEM DESCRIPTION -----
GRADE 17-4
Size 17-4 HEART RND BAR 4-1/2 STD Country of Melt: USA
Ship Condition A Country of Mfg.: USA
NAFTA Country of Origin is Country of Melt

Total Bundles 2 SON Weight 4346

----- SPECIFICATIONS -----
THE PRODUCTS LISTED ON THIS MILL TEST REPORT SATISFY PREFERENCE CRITERION B
AS DEFINED IN ARTICLE 401 OF THE NORTH AMERICAN FREE TRADE AGREEMENT.
AMS 2303E AMS 5643Q
ASME SA564 TYPE 630 B04 A05 ASTM A484 06B
ASTM A564 04 TYPE 630 ASTM B112 96
ANNEAL 1500F/30MIN/RAPID COOL UNS S17400, AISI 630
ESP/UNALLOY-IWRC MH-BS1 REV 3 NO WELD REPAIR
FREE OF MERCURY CONTAMINATION----- MECHANICAL & OTHER TESTS -----
Test Condition H900
Hardness as shipped 286 HBW Hardness as tested 400 HBW
Hardness as shipped (30 HRC) Hardness as tested (43 HRC)
Grain size 5.5 Tensile strength, KSI (MPa) 203.0 (1400)
Micro 0.2% Yield Strength, KSI (MPa) 181.0 (1248)
Intergranular corrosion OK
Macro OK
Elongation % in 4D 13.0
Reduction of area % 40.0
Ferrite .0
Hardenability 43 HRC----- CHEMICAL COMPOSITION -----
Carbon (C) .008 Manganese (Mn) .710
Phosphorus (P) .021 Sulphur (S) .025
Silicon (Si) .360 Chromium (Cr) 15.830
Nickel (Ni) 4.710 Cobalt (Co) .030
Copper (Cu) 3.430 Moly (Mo) .110
Nitrogen (N) .031 Columbium (Cb) .300
Titanium (Ti) .005 Aluminum (Al) .003
Tin (Sn) .005 Cerium (Ce) .010
Boron (B) .001 Tantalum (Ta) .005
Vanadium (V) .025
Columbium/ Tantalum (Cb-Ta) .305
Iron (Fe) Balance
Frequency .000
Melt Practice RAF
Refining Practice AOD
De-long Ferrite

Severity .000

This report is a copy of original
mill certificate and verifies
that the product meets the
requirements as originally ordered
by Energy Steel Products.

DATE: 9-12-07 VERIFIED BY:

Knowingly & willfully falsifying or concealing a material act on this form,
or making false, fictitious or fraudulent statements or representations
herein could constitute a felony punishable under federal statutes.We hereby certify that the test results shown in this report are correct and
accurate as contained in the records of the company and are in compliance
with the specifications, codes, and standards listed above.Dixonsville Stainless Steels, Inc.
3015 Commerce Pkwy.
Raleigh, NC 27628

M.F. Marciano, Quality Manager

CASTLE METALS CORP.

DATE RCVD 10/25/07

IAC 14998

APPROVED BY